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09/460,638	12/14/1999	KENNETH G. FLUGAUR	0325.00324	2751
21363	7590	09/08/2004	EXAMINER	
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ST. CLAIR SHORES, MI 48080			ART UNIT	PAPER NUMBER
			1763	

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 09/460,638
Filing Date: December 14, 1999
Appellant(s): FLUGAUR ET AL

Christopher I. Maiorana
For Appellant

EXAMINER'S ANSWER

MAILED

SEP 09 2004

GROUP 1700

This is in response to the appeal brief filed June 14, 2004.

(1) *Real Party in Interest*

A statement identifying the real party in interest is contained in the brief.

(2) *Related Appeals and Interferences*

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) *Status of Claims*

The statement of the status of the claims contained in the brief is correct.

(4) *Status of Amendments After Final*

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) *Summary of Invention*

The summary of invention contained in the brief is correct.

(6) *Issues*

The appellant's statement of the issues in the brief is correct.

(7) *Grouping of Claims*

The appellant's statement in the brief that certain claims do not stand or fall together is not agreed with because Applicant merely points out differences in what the claims cover and this is not an argument as to why the claims are separately patentable.

(8) *Claims Appealed*

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

6,143,078	Ishikawa, Tetsuya et al.	11-2000
5,665,640	Foster, Robert F. et al.	9-1997

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-10, 12-17, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Foster et al (USPat. 5,665,640) in view of Ishikawa et al (USPat. 6,143,078). This rejection is set forth in a prior Office Action, mailed on December 8, 2003.

Claims 11, 18, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Foster et al (USPat. 5,665,640) and Ishikawa et al (USPat. 6,143,078) in view of Bernard J. Curtis (USPat. 4,328,068). This rejection is set forth in a prior Office Action, mailed on December 8, 2003.

(11) Response to Argument

Applicant states that Foster does not teach that Foster's one-piece outer portion "isolator" sleeve (item 271; Figure 2B; col. 18 lines 33-59) has "dimensions" to "prevent or inhibit plasma arcing to an electrically conductive surface". Applicant then presents the Examiner's citation of the Foster reference. The Examiner cited the relevant portion of Foster because Foster states that his item 271 as shown in Figure 2B, and having "dimensions", acts to, along with other components of Foster, in preventing plasma arcing to one of Foster's electrically conductive surface (222; Figure 2B). Further, that specific dimensions of Foster's "isolator" sleeve (item 271; Figure 2B; col. 18 lines 33-59) is not taught, it has been held that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a

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device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device (*Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984), MPEP 2144.04).

Applicant further states:

“

Since the isolator sleeve 271 of Foster is not exposed to the plasma, the isolator sleeve 271 does not appear to prevent or inhibit plasma arching.

“

The Examiner does not understand Applicant's premise that Foster's isolator sleeve 271 must be exposed to the plasma in order for the isolator sleeve 271 to prevent or inhibit plasma arching? Applicant's very citation of Foster demonstrates that Foster's depicted dimension of Foster's isolator sleeve 271 acts to, along with other components of Foster, in preventing plasma arcing to one of Foster's electrically conductive surface (222; Figure 2B) from Foster's RF feed line (256; Figure 2B) which Foster's isolator sleeve 271 completely covers to inhibit Foster's cited arcing. Foster's isolator sleeve 271 has “dimensions” (i.e. length, diameter) that prevent arcing between one of Foster's electrically conductive surfaces (222; Figure 2B) from Foster's RF feed line (256; Figure 2B).

Applicant states that “the showerhead/electrode 222 of Foster does not appear to be **a surface of an aperture**”.

The Examiner disagrees. Foster indeed teaches an electrically conductive surface (item 222; Fig.2B;col. 18 lines 50-58) of a plasma processing chamber (item 40; Figure 2) aperture ("within cylinder 238"; col. 18, line 53). An element-by-element comparison between the Examiner's citations of Foster and Applicant's Figure 1 supports the Examiner's positions. Applicant's surface of an aperture is shown as

Applicant states:

“

...the Examiner asserts that a gas nozzle 302 of Ishikawa is similar to the isolator sleeve 271 of Foster. However, one of ordinary skill in the art would not appear to agree with the assertion that the isolator sleeve 271 and gas nozzle 302 are similar devices.

“

The Examiner disagrees. The examiner must determine what is “analogous prior art” for the purpose of analyzing the obviousness of the subject matter at issue. “In order to rely on a reference as a basis for rejection of an applicant’s invention, the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned.” *In re Oetiker*, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992). See also *In re Deminski*, 796 F.2d 436, 230 USPQ 313 (Fed. Cir. 1986); *In re Clay*, 966 F.2d 656, 659, 23 USPQ2d 1058, 1060-61 (Fed. Cir. 1992) – MPEP 2141.01(a). In particular, the Examiner believes that both Foster and Ishikawa are each reasonably pertinent

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to the particular problem with which the inventor was concerned – i.e. providing a conveyance from outside the process chamber to inside the process chamber.

Applicant states:

“

Furthermore, no evidence has been provided by the Examiner that one of ordinary skill in the art would consider a ceramic insulator sleeve to be similar to a metal gas nozzle.

“

However, the Examiner has already provided proper motivation:

“

Motivation to construct Foster's one-piece sleeve to include a flange section configured to remain outside the aperture as taught by Ishikawa and to optimize the dimensions of the flange section, the lower section, and the bottom planar angle of Foster's one-piece sleeve is to enhance hermeticity of the process chamber as taught by Ishikawa (column 10, lines 20-28).

“

Applicant states:

“

...the proposed combination still does not place the flange outside a wall of a processing chamber as presently claimed.

“

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In response, the Examiner has cited Ishikawa for teaching that Ishikawa's flange section (302/314 interface) is depicted as being outside a wall (outer surface of 314) as clearly shown by Ishikawa's Figure 5.

Applicant states (page 10), referring to the Examiner's support for motivation in Ishikawa, that..

“

Nowhere in the above quoted text, or in any other section, does Ishikawa appear to discuss the flange of the gas nozzle 302 providing “enhance hermeticity”.

“

Yet Applicant specifically cites Ishikawa as reciting “to prevent gas leaks to the interior of the chamber.”. Thus Ishikawa specifically teaches that his depicted structure prevents gas leaks, or, in other words, provides hermeticity:

Hermetic¹ - *adj* 1. airtight. so tightly or perfectly fitting as to exclude the passage of air.

Applicant states (page 15):

“

Group 2 further provides a step for transmitting a signal through the device out from the plasma processing chamber. Despite the assertion by the Examiner, the reactor 40 in FIG. 2 of Foster does not appear to show an RF signal passing out from the reactor 40. In particular, an

¹ http://encarta.msn.com/dictionary_/hermetic.html

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arrowhead on a line connecting an RF Power Source 57 to the reactor 40 of Foster points into the reactor 40. Therefore, Foster and Ishikawa, alone or in combination, do not teach or suggest...

“

The Examiner disagrees. In particular, the Examiner has already asserted that Foster teaches transmitting a signal ("RF"; col. 18, line 54) through the device (item 58; Figure 2; col. 18 lines 33-59; items 270-272 and conduit 256; Figure 2B; col. 18, lines 33-59) out from the chamber (item 40; Figure 2) and arrives at showerhead/electrode 222, Figure 2B that resides outside of Foster's aperture.

Applicant states:

“

Group 4 further provides steps for initiating a plasma in a chamber then cleaning the chamber and a device. Despite the assertion by the Examiner, column 30, line 14 of Foster does not appear to discuss cleaning the isolator sleeve 271 (asserted similar to the claimed device).

“

In response, the Examiner has asserted that Foster's device (item 58; Figure 2; col. 18 lines 33-59; items 270-272 and conduit 256; Figure 2B; col. 18, lines 33-59) is also disclosed in Foster's Figure 2 where plasma is generated within Foster's aperture 50, Figure 2. The grounded conductive element 51, Figure 2 and the RF power conducted through item 58 to the electrode 52 would generate plasma within the space of aperture 50 thereby "cleaning", by etching, Foster's device (item 58; Figure 2; col. 18 lines 33-59; items 270-272 and conduit 256; Figure 2B; col. 18, lines 33-59) and chamber (42; Figure 2).

Applicant states:

“

Furthermore, the Examiner's assertion that “it is well established that changes in apparatus dimensions are within the level of ordinary skill in the art” does not appear to be relevant as group 5 changes a shape, not a dimension, of the one-piece sleeve 50.

“

Applicant's suggested “shape”, as manifested by an angle (“non-orthogonal”), is, in the opinion of the Examiner, a dimensional change of one or both components making up the angle. For example, by lengthening Foster's device (item 58; Figure 2; col. 18 lines 33-59; items 270-272 and conduit 256; Figure 2B; col. 18, lines 33-59) and Foster's electrode (222; Figure 2B) the angle between these surfaces becomes “non-orthogonal”. Further, it has been held that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device (*Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984), MPEP 2144.04).

Applicant states:

“

Nowhere in the above cited text, or in any other section, does Foster appear to discuss plasma being generated for a predetermined period.

“

The Examiner disagrees. Foster demonstrates control for the time that Foster's plasma is maintained during processing as cited earlier by the Examiner:

“

...increased amount of titanium that must be deposited, thus increasing the amount of titanium applied and etched away, increasing the titanium deposition time, and increasing the etching time that is necessary to remove excess titanium.

“ (column 3, lines 1-7)

With respect to Applicant's arguments of claim 13, that Foster is silent with respect to "a predetermined amount of pressure against an inner wall of the aperture." It is noted, per the discussion of Foster's vacuum processing conditions that a requisite amount of a predetermined pressure against an inner wall of Foster's aperture must be inherently applied to sustain the vacuum processing conditions as taught by Foster. Illustrative, Foster teaches the device (item 58; Figure 2; col. 18 lines 33-59; items 270-272 and conduit 256; Figure 2B; col. 18, lines 33-59), as claimed in claim 12, is held in the plasma processing chamber aperture via a predetermined amount of pressure against a wall of the aperture as claimed in claim 13 - the predetermined amount of pressure against a wall of the aperture as claimed is taught by Foster according to the fastening means (see screws, not labeled; Figure 2B) provided by Foster. That Foster's screws are not "part of" Foster's device is not accurate because RF line (254; Figure 2B) extends upward and outside of Foster's flange 272 and Foster's fastening means are required for the operation of Foster's apparatus.

Applicant states that “Foster appears to be silent regarding a plasma etch.” as support for the supposed lack of motivation for combining the references of Foster et al (USPat. 5,665,640) and Ishikawa et al (USPat. 6,143,078) in view of Bernard J. Curtis (USPat. 4,328,068). In response to applicant’s argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the cited references provide teaching, suggestion, and motivation for combining the references. In particular, Foster does indeed teach etching processing as cited by Applicant (Page 29 – Appeal Brief). Further, both Foster and Curtis teach “signal transmission through a device” as claimed by Applicant (claim 4, for example) placing Foster and Curtis in the same relevant art. Further the examiner must determine what is “analogous prior art” for the purpose of analyzing the obviousness of the subject matter at issue. “In order to rely on a reference as a basis for rejection of an applicant’s invention, the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned.” *In re Oetiker*, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992). See also *In re Deminski*, 796 F.2d 436, 230 USPQ 313 (Fed. Cir. 1986); *In re Clay*, 966 F.2d 656, 659, 23 USPQ2d 1058, 1060-61 (Fed. Cir. 1992) MPEP 2141.01(a). In particular, reference are in the field of applicant's endeavor (plasma processing) and are reasonably pertinent to the

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particular problem with which the inventor was concerned – signal transmission for plasma processing.

Applicant believes the Examiner's rejections under Bernard J. Curtis (USPat. 4,328,068) is based on "Modifying the isolator sleeve 271 of Foster to operate as a light pipe, as taught by Curtis, appears to be incompatible with isolating the RF line 256. ". The Examiner has not stated in any prior action that Applicant's modification be made in order to combine the references.

The Examiner has stated that...

“

It would have been obvious to one of ordinary skill in the art at the time the invention was made to replace Foster and Ishikawa's RF physical signal as discussed above with Bernard J. Curtis's spectroscopic endpoint detection signal.

Motivation to replace Foster and Ishikawa's RF physical signal as discussed above with Bernard J. Curtis's spectroscopic endpoint detection signal is for determining the end point of the plasma etching process as discussed by Bernard J. Curtis (column 1, line 67 - column 2, line 5).

“

As such, the Examiner has not stated that “the isolator sleeve 271 of Foster to operate as a light pipe” as suggested by Applicant.

Applicant states:

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“

A second assertion by the Examiner to have both signals present during processing as suggested by Curtis does not appear to result in the claim language. FIG. 3 of Curtis shows two distinct structures used to carry the RF signals and the light signals. Applying the teachings of Curtis to Foster would appear to add a second structure distinct from the isolator sleeve 271 of Foster to convey the light signals.

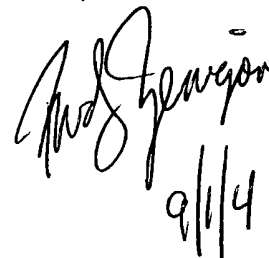
“

The Examiner disagrees. Having both signals present during processing as suggested by Curtis does result in the claim language depending on the claim.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Rudy Zervigon
Examiner
Art Unit 1763




9/1/4


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September 1, 2004

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